A REVIEW OF EFFICIENCY MEASURES FOR REITS AND THEIR SPECIFIC APPLICATION FOR MALAYSIAN ISLAMIC REITS

Abstract

Purpose – This paper aims to present a conceptual model on the efficiency of Islamic Real Estate Trusts (I-REITs) available in Malaysia. The key difference between the Islamic and their conventional investment vehicle part is mainly its own *Shariah* framework.

Design/methodology/approach – The paper reviews and synthesises the relevant literature on the performance analysis and efficiency measurements of Real Estate Investment Trusts. The paper then develops and proposes a conceptual model to measure the efficiency of Malaysian Islamic REITs.

Findings – The paper identifies and examines the appropriate methods and instruments to measure the efficiency in relation to the risk and profitability of Islamic REITs. The efficiency measure is important for the fund managers in order to maximise the shareholders' return in an investment of property portfolio as well as proposing the best way to allocate resources efficiently.

Research limitation/implications – This is a preliminary review of current work that identifies the issues that will be addressed in future empirical research. The authors will be undertaking this future empirical research in measuring the efficiency of Malaysian REITs particularly the Islamic REITs using the non-parametric approach of Data Envelopment Analysis.

Originality/value – To date, there has been very limited research on the efficiency measurement of Islamic REITs. The current analysis of REIT has been focused on traditional non-Islamic funds. This paper will review and discuss the current literature on efficiency measurement to determine the most appropriate approaches and methodologies for future application in performance analysis of efficiency measure for Malaysian Islamic REITs.

Keywords: Data Envelopment Analysis, Efficiency, Islamic REITs, M-REITs,

Paper type Conceptual paper

1. INTRODUCTION

Real Estate Investment Trusts (REIT) have become an alternative investment option for both retail investors and wholesale investors who do not want to own directly the physical real estate. REITs offer real estate investors the liquidity that the direct ownership real estate investment failed to offer. Investors can access the securitised real estate market easily as the share prices are moderately priced and are affordable as compared to the direct ownership real estate. In REITs, investors are able to benefit from the stable income distributions and capital gains from the REITs property portfolio. REIT or formerly known as property trust fund could be defined as money pooled in a unit trust managed by fund manager which investments primarily are based on income producing real estate or other real estate related assets investment (Securities Commission Malaysia, 2012).

According to statistics produced by Securities Commission of Malaysia, since the introduction of Malaysian REIT in 2005, the market has grown significantly from a market capitalisation of RM10 billion in 2005 to RM16.3 billion in 2011 and RM33.13 billion in 2013. As the capital market evolves, investors are keen to skew their portfolio towards the opportunities available in the REIT market as the investment offers reasonable return and risk.

Performance measurement of REITs in the investment portfolio is a significant aspect for REIT investors (retail and wholesale investors) to secure the optimum result in profit and returns. The REITs' efficiency in terms of profitability and characteristics of risk/return needs to be assessed before the construction of the investment portfolio. Nevertheless, REIT analysts often do not incorporate the REITs' efficiency in the investment portfolio selection (R.I Anderson & Springer, 2003). In their study, a new selection tool is introduced using the relative REIT efficiency score and Price-to-Net Asset Value ratio as filtering criteria in constructing the portfolio of which of the REIT is to be added to the investment portfolio. The results revealed that selected REITs have performed better during the study period. This shows the importance of incorporating the REITs' efficiency score in the investment portfolio. However, there is limited study conducted in the context of Malaysian REIT especially in incorporating the REIT efficiency scores with the REIT performance (particularly the Malaysian Islamic REITs) in constructing the investment portfolio.

Malaysian REITs' managers encounter considerable pressure to perform well due to the requirement of REITs paying at least 90 percent of the income to the unitholders. Therefore, the REIT managers need to assess the efficiency and plan their best-practice strategies to improve the performance. Brockman (2000) performed a study on the relationship of efficiency score and the performance measurement of REITs. The findings revealed a highly correlated relationship between the input and output oriented DEA efficiency score with Sharpe, Treynor and Jensen index of REITs in 1997 and 1998. The results highlight the importance of being efficient because efficiency will lead to an improvement in the profitability of a firm.

Hence, this paper addresses the importance of efficiency measurement in REITs for both REITs' investors and REITs' managers by developing potential frameworks on the methods of efficiency assessment in the context of Malaysian REITs. The remaining of the paper is structured as follows. The next section will discuss the background of Islamic REIT. This is followed by Section 3, where we provide a brief review on previous studies done in performance analysis and efficiency. Then, section 4 will look into the potential framework to assess the efficiency of Malaysian Islamic REITs. The article concludes in Section 5.

2. BACKGROUND OF ISLAMIC REAL ESTATE INVESTMENT TRUSTS IN MALAYSIA

In November 2005, the Malaysian Securities Commission issued Guidelines on Islamic Real Estate Investment Trusts (Islamic REITs) which makes Malaysia a frontrunner in developing *Shariah*-compliant investment options particularly the Islamic REITs. The introduction of the Islamic REITs provides a new option for investors to consider Islamic REITs as another viable alternative investment of *Shariah* compliant instruments vehicle available in the Malaysian capital market. This is because Islam does influence the investment behaviour of Muslim investors in their financial decision making besides risk and return (Tahir & Brimble, 2011).

To date, there are sixteen Malaysian Real Estate Investment Trusts (M-REITs) listed on Bursa Malaysia, of which, three are *Shariah* compliant namely Axis REIT, Al Aqar REIT and currently stapled KLCCP REIT. The first company to convert from conventional to Islamic REIT was Axis REIT. Axis REIT was listed as conventional in 2005 before converting to Islamic REIT in 2008 because the company aims to widen its investor base not only to the conventional investors but also gauge the demand coming from the Muslim investors.

As depicted in Table 1, the positive growth of the *Shariah* compliant asset management can be seen in the increasing number of market capitalisation from 2011 to 2013. For instance, the market capitalisation of Islamic REITs alone increased significantly from RM 2.9 billion to RM 14.14 billion in 2011 and 2013 respectively.

Table 1: Capital Market Data and Statistics

***Shariah* compliant Securities on Bursa Malaysia**	**Dec 2013**	**Dec 2012**	**Dec 2011**
Number of *Shariah*-compliant securities	650	817	839
Total listed securities	911	923	946
% to total listed securities	71%	89%	89%
Market Capitalisation of *Shariah*-compliant securities (RM billion)	1,029.62	942.15	806
Total market capitalisation	1,702.15	1,465.68	1,285
% to total market capitalisation	60.49%	64.28%	63%
Islamic Exchange Traded Funds (ETF)	**Dec 2013**	**Dec 2012**	**Dec 2011**
No of Islamic ETF	1	1	1
Total industry	5	5	5
NAV of Islamic ETF (RM billion)	0.31	0.293	0.411
Total industry	1.03	0.923	1.03
% to total industry	30.10	31.7%	39.9%
Islamic Real Estate Investment Trusts (REIT)	**Dec 2013**	**Dec 2012**	**Dec 2011**
No of Islamic REIT	4	3	3
Total industry	17	16	15
Market Capitalisation of Islamic REIT (RM billion)	14.14	3.47	2.9
Total industry	33.13	24.59	16.3
% to total industry	42.68%	14.11%	17.8%

Source: Author's compilation from Securities Commission (2014)

2.1 *Shariah* Guideline of Real Estate Investment Trust

The Guidelines highlight two requirements as compared to the conventional REITs. First is the need to establish a *Shariah* Advisory Committee and secondly to ensure all operations and concerns comply with the *Shariah* principle. The rental collected from the tenants must comply with *Shariah* principles. All concerns and operations are considered permissible except for *riba* transaction, conventional banking services, gambling and casino operations,

sale of liquor and non halal food items among others. In the event that the tenants is found to operate in non-permissible activities such as operating mixed activities permitted by *Shariah* and a small extent of prohibited activities, then *Shariah* Advisors must perform additional assessment. For instance, *Shariah* Advisors will advise the fund manager not to invest in real estate investment if the total rent received from non-permissible activities exceeds 20% of the total space of the real estate. The revised screening methodology for *Shariah* compliant status by Securities Commission, which was enforced in 2013, highlights a stringent two tier approach which includes the company's business activities and the financial ratios. For instance, all activities pertaining to investment, deposit and financing of I-REITs must comply with the *Shariah* principle. The insurance must be based on Takaful scheme (a type of Islamic insurance which comply with the *Shariah* laws) to insure the real estate owned by the fund portfolio. In the case of forward sales or purchase of currency, the fund manager for I-REITs is encouraged to deal with Islamic financial Institution.

Singapore and UAE follow Malaysia's lead in *Shariah* compliant products when both launched their first *Shariah* compliant REIT namely Sabana REIT and Emirates REIT respectively in 2010. Singapore's Sabana REIT, on the other hand, becomes the world's first REIT adopting the standard of *Shariah* compliance which has been accepted among investors in the Gulf Cooperation Council (GCC) States. Hence, under *Shariah* investment principles, Sabana REIT should derive no more than 5.0% of its gross revenue from lessees and tenants engaging in non-permissible activities. For the purpose of leverage or debt, if *Shariah* products are not available in the market, Sabana REIT could take up to one third of Net Asset Value or market capitalisation. Table 2 shows the differences in *Shariah* compliance policy implemented by Malaysian REITs and Sabana REIT.

Table 2: The differences in *Shariah* compliance policy implemented by Malaysian REITs and Singapore REIT.

Regulation	**Malaysian REIT**	**Singapore REIT**
Non *Shariah* income distribution	Must not exceed 20%	Must not exceed 5%
Proportion of non *Shariah* debt	0%	Up to 1/3 of NAV or market capitalisation

Source: Thomas (2014)

Performance analysis is an important tool to stay competitive globally. In order to survive the intense competition, a firm needs to constantly evolve and improve tremendously. Hence, performance analysis and benchmarking are needed to identify the strengths of the firms and to formulate ways to mitigate the weaknesses. Previous studies documented that performance analysis of Malaysian REITs could be measured by various ways which include the composite measurement of Sharpe, Treynor and Jensen (Hamzah, Rozali, & Mohd Tahir, 2010; Mohamad & Mohd Saad, 2012; Tze San; Ong, Teh, Soh, & Yan, 2012; Yusof & Bin Mohd Nawawi, 2012) financial ratio analysis (Chuweni, Ahmad, & Mohd Adnan, 2014; Chuweni, Ahmad, & Ting, 2014; Chuweni, Ismail, Ahmad, & Ali, 2015) corporate governance of Islamic REITs (Chuweni & Ahmad, 2014), financial and management strength of Islamic REITs (Osmadi & Razali, 2014), DCC-MGARCH model wavelet coherence methodology (Mokhtar & Masih, 2014), qualitative method (Alias & Soi Tho, 2011) Engle-Granger Cointegration and Vector auto regression (Nawawi, Husin, Abdul Hadi,

& Yahya, 2010). In term of diversification benefits, I-REITs have shown a high degree of robustness during the GFC and provides enhanced portfolio diversification in which were not evident in conventional M-REITs (Newell & Osmadi, 2009).

It would be beneficial to also note that Islamic REITs caters to a specific market as the Socially Responsible Investment (SRI) does. Similar to the case of Islamic REITs, a study conducted by Jones, van der Laan, Frost, & Loftus, (2007) on the investment return performance of SRI in Australia revealed that SRI funds are also underperforming the market in the year 2000 to 2005 by using the Jensen' alpha and Capital Asset Pricing Model.

In addition to that, greater acceptance of non-Muslim investors to *Shariah* compliant real estate investment certainly will take some time in the future but the gap between those two can be bridged if the Islamic REIT could focus on socially positive impacts of income producing properties to attract non-Muslim SRI investors into the Islamic capital markets particularly the Islamic REITs (see Bennett & Iqbal,(2013) for further reading on bridging the gap between SRI and Islamic financial markets).

3. EFFICIENCY AND REITS

Performance of REIT could also be determined by using efficiency measurement. Other financial indicators such as ROI and ROE may be used to indicate the financial performance of a firm but are not sufficient to evaluate the operating efficiency. The financial performance measured in term of profit earned by an organisation or firms does not reflect either the firm resources such as capital and labour had been utilised efficiently. Efficiency could be defined as how well a system works to produce certain amount of output given a certain amount of input with the advance of technology. A firm has more efficiency if it could produce more output, given the same or less input with the availability of technology. Table 3 depicts the different methodologies of efficiency measurements in REITs.

Nguyen & Swanson, (2009) studies the firm efficiency by using the stochastic frontier approach and its relation towards the stock performance. Their result revealed that the level of firm efficiency is a significant determinant for stock return and its efficiency should be considered in an asset pricing models.

As proposed by Farrell, (1957) the component of efficiency can be divided into technical efficiency (TE) and allocative or economic/price efficiency. The former is or known as pure technical efficiency measure the input and output while the latter is a measurement conducted in relation to values such as cost, revenue and profit. Hence, technical efficiency can be defined as the ability of firm to maximise the output given the input while allocative efficiency can be defined as the ability of a firm to utilise the input optimally given the corresponding prices.

These components of efficiency in a portfolio investment can be measured either by using parametric or non-parametric approaches. The parametric approach for instance, determines the relationship between the performance variable and other variables. Parametric approach or also known as econometric model specification includes the Stochastic Frontier approach (SFA), Distribution Free Approach (DFA) and Thick Frontier Approach (TFA). In the case of REITs, the commonly used are the SFA (see Ambrose, Highfield, & Linneman, 2005; Miller,

Clauretie, & Springer, 2006; Sham, Sing, & Tsai, 2009) as compared to the other counterparts.

To build up the investment portfolio, the investors will need to evaluate the operation efficiency to comprehend how a company operates and its strategies to produce the optimum output in terms of sales and revenue. Operation efficiency in REITs has widely adopted in previous studies (Anderson, Fok, Springer, & Webb, (2002); Lewis, Springer, & Anderson, 2003) as REITs are mostly cost efficient and REIT could improve operating efficiency through expansion by enlarging their portfolio. Miller et al., 2006; Miller & Springer, (2007) investigate the cost efficiency of US REIT by using the stochastic frontier and panel data model of translog function. In their findings, for REITs to be more efficient, a higher leverage is needed by these smaller inefficient firms. In the case of Asian REITs, there is no significant values of economies of scale in revenue and operating income for larger REITs (Sham et al., 2009).

On the other hand, non-parametric approaches known as linear programming technique include Free Disposal Hull (FDH) and Data Envelopment Analysis (DEA). In other emerging markets, Wong, Gholipour, & Bazrafshan (2012) investigate the efficiency of real estate and construction companies in Iran by using DEA analysis for the year 2009 to 2010. Their findings revealed that most real estate and construction companies in Iran are technical, scale and mix efficient. Business opportunities are encouraged through mergers and acquisition as their results indicate that these real estate and construction companies are experiencing diseconomies of scale. Contrary in China, Zheng, Chau, & Hui, (2011) indicate that most inefficient listed real estate companies are experiencing increasing return to scale and could further increase operating efficiency by expansion. They measure the efficiency of these listed real estate companies in China by using the DEA approaches which covers the CCR-DEA, BCC-DEA and Super-Efficiency-DEA models.

With regards to Malaysian REITs and its efficiency, Jamal (2013) investigated the effectiveness of interest rate and dividend towards the performance of REITs by using multiple regression model from 2008 until 2012. The results of regression indicate the strong positive correlation between the variables and are significance towards the performance of REITs. In other study conducted by Harun, Md Tahir, & Zaharudin, (2012) in measuring efficiency of REIT using DEA from 2007 until 2009 indicates that that the efficiency score are 66.53% in 2007 increase to 74.12% due to the Malaysian economics recoveries.

Table 3: Summary of studies in the efficiency measurement in REITs

No	Author(s)/Year	Methodology
1	Caicedo-Llano & Kurtbegu, (2014)	Bootstrap Analysis for Asian REIT's portfolio
2	Ebrahim & Mathur, (2013)	Model development on the efficiency of the Umbrella Partnership (UPREIT) organisational form
3	Chung, Fung, & Hung, (2012)	Effect of institutional ownership and REITs' efficiency using Stochastic frontier approach
4	Schindler (2011)	Time series approach for 12 emerging and 4 developed

		securitised real estate markets
5	Sham et al. (2009)	Translog, semi-log quadratic and simple quadratic for Asian REITs
6	Miller et al. (2006)	A stochastic-frontier, panel data model specifying a translog cost function on REITs
7	Ambrose et al. (2005)	Stochastic frontier estimation of the Translog cost function on REIT
8	Devaney & Weber (2005)	Linear programming and consider total risk and systematic risk as REIT inefficiency
9	Topuz et al. (2005)	DEA and parameter techniques for REIT
10	Anderson & Springer (2003)	DEA for REIT
11	Lewis, Springer, & Anderson, (2003)	A Bayesian Stochastic frontier model for REITs
12	Anderson et al. (2002)	DEA for REITs
13	Kuhle & Alvayay (2000)	A runs test (non-parametric) and autocorrelation test (parametric) of Equity REIT prices

3.1 The usage of DEA in efficiency measurement

Measuring the efficiency of service sector by using DEA is not new in Malaysia. Previous researchers used DEA with different input and output variable instruments in many areas and domain. For instance, in banking sector alone, numerous researchers employed DEA to measure the efficiency of conventional and Islamic banking in Malaysia (Fadzlan Sufian, Kamarudin, & Mohd Noor, 2014; Ismail, Abd. Majid, & Ab. Rahim, 2013; Mohd Tahir, Razali, & Haron, 2013; Yahya, Muhammad, & Abdul Razak, 2012; Ong, Lim, & Teh, 2011; Ahmad & Abdul Rahim, 2012; F Sufian, 2008; Fadzlan Sufian & Haron, 2009; Ahmad Mokhtar, Abdullah, & Alhabshi, 2008; Fadzlan Sufian, 2007).

In Malaysia, DEA has been extensively used in the measuring efficiency in other areas and domain include the healthcare sector (Applanaidu, Samsudin, Ali, Dash, & Chik, 2014; Moshiri, Aljunid, Mohd Amin, Dahlui, & Norlida Ibrahim, 2011), hospitality sector (Salman Saleh, Assaf, & Son Nghiem, 2012) telecommunication sector (Salleh et al., 2013), agriculture sector (Gabdo, Abdlatif, Mohammed, & Shamsuddin, 2014; Mailena, Shamsudin, Radam, & Latief, 2014; Rosli, Radam, & Abdul Rahim, 2013; Selamat & Nasir, 2013; Aisyah, Nalini, Hussein, & Latiff, 2012) (Mohd Idris, Siwar, & Talib, 2013), Islamic unit trust (Kabir Hassan, Nahian Faisal Khan, & Ngow, 2010; Shabri Abd. Majid, Kassim, Hamid, & Yusof, 2010), *zakat* institutions (Abd Wahab & Abdul Rahman, 2012, 2013) manufacturing sectors (R. Ismail & Sulaimann, 2007) and education sectors (Kuah & Wong, 2011).

On the other hand, M. K. A. Ismail, Abd Rahman, Salamudin, & Kamaruddin (2012) investigate the effectiveness of Malaysian listed property companies on portfolio selection for

investor over long term. They used CCR model of DEA under assumptions of CRS and yearly basis for the efficiency measurement. In their findings, they postulate that DEA can effectively be used as a tool for investor in portfolio selection over long run in Malaysian market. Hence, this study proposes to extend the research done by using DEA as the measurement of efficiency for Malaysian REIT.

In addition, there is a need to study different variables of input and output to measure the relevant and robustness of the economic measurement efficiency of M-REIT. Hence, future studies will attempt to fill the gap by conducting research on the efficiency measurement of M-REIT by comparing Islamic and their counterparts and its relation to maximise the shareholder interest in REITs, whilst taking into consideration the *Shariah* requirement.

The contribution of this study is to determine possible approaches and issues that should be considered to measure the performance of M-REIT in term of its efficiency and the relation towards risk and profitability. An aspect of novelty for this paper is its attempt to contribute towards the efficiency measurement of Islamic REITs, as there have been limited studies conducted in Islamic REITs. Next section will focus on the limitation of the study by proposing the potential frameworks to determine the conventional and non-conventional Malaysian REITs' efficiency scores using the non-parametric approach of DEA.

4. POTENTIAL FRAMEWORKS TO ASSESS REIT EFFICIENCY

The literature review discussed in this paper has provided an overview of the importance in assessing the efficiency of Islamic REITs from a Malaysian property investment perspective. With reference to this review of previous literature discussed beforehand, it is proposed to examine possible issues to measure the efficiency of Malaysian REITs and Real Estate Funds using Data Envelopment Analysis. The outcome of the research shall be beneficial to the related institutional and potential investors who may consider Malaysian REIT particularly the Islamic REITs as another viable alternative investment available in the market.

Previous studies documented that DEA is an important tool to solve for decision making problem and provide basis for benchmarking. DEA employs linear programming and is not a form of regression. The usage of DEA is more flexible than the parametric approach. The reasons being, firstly DEA allows ranking as each firms under study or Decision Making Units (DMU) is assigned with a single efficiency score and an efficiency score set with peer DMU. Secondly, DEA provides a target for inefficient DMU and it outline how much input or output could influence the performance and improve on efficiency (Gregoriou & Zhu, 2005). Thirdly, the DMU that appears frequently in reference set of efficiency is the global leader in the market. This ranking information is important for the firm to stay competitive in becoming the market benchmark. Fourthly, the researcher is given flexibility as DEA does not require any standard on input or output selection. Fifthly, once given the selected inputs and outputs, DEA construct its own functional form unlike in econometric approach which assumes its functional form by using either Cobb-Douglas or Translog. By doing this, the misspecification of frontier technology can be proscribed (Charles & Kumar, 2012). Lastly, DEA also works with small sample size (Fadzlan Sufian et al., 2014). The rule of thumb suggested by Cooper et al. (2006) for the total number of sample or DMUs in this future study should be equal or greater than three times larger than the sum of inputs and output variables.

On the return of scale assumption, this future research study propose to use the variable return to scale or known as the BCC model to define the best practice frontier, which suggests that a firm is only compared with another firm with similar size only. To reach the frontier efficient, DEA use either input or output oriented. The former models focus on the input are optimised or reduces while the output are being constant at current level, meanwhile the latter focus output are optimised or reduced while the input are being constant at current level. The selection of the variables is considered valid if it complies with the rule of thumb and the efficiencies measurement could be conducted. Table 4 depicts the selection of input and output factors used in the previous studies. The future research will identify the selection of inputs and outputs in order to determine the efficiency level of the Malaysian Islamic REITs. The empirical framework using the non-parametric approach of DEA will be developed based on the selection of input/output, DEA orientation and other variables influencing the efficiency level of the Malaysian REITs, particularly the Islamic REITs.

Table 4: Selection of input and output factors

Authors	**Sample**	**Input**	**Output**
Harun et al., (2012)	Malaysian REITs	Total expense (operating expenses, administrative expenses, management fees and interest expense)	Total Assets, Total Revenue and Net Asset Value
Ismail et al. (2012)	Malaysian listed properties companies	trading volume, dividend yield, size, book to market, risk, price earnings, liquidity, leverage and asset utilisation	Return, ROE, ROA
Frijns et al. (2012)	US public listed companies	net property, plant and equipment, total long debt, total assets, book value of equity, capital expenditure, costs of goods sold, selling and general administrative expense.	Sales and market value
Wong et al. (2012)	Iran's real estate and construction companies	employee number, registered capital, operation cost, total assets	Profit and revenue
Rubio et al. (2012)	3 different types of investment (Islamic mutual funds, International mutual funds and American mutual funds)	Risk measure (fund standard deviation, the lower partial momentum (LPM) and maximum drawdown period.	Expected return, upper partial momentums (UPM) and the maximum period of consecutive gain.
Zheng et al. (2011)	China listed real estate companies	Registered capital, asset value, employee number & operation cost	Revenue and profit
Md Saad et al. (2010)	Malaysian unit trust companies	Management expense ratio and portfolio turnover ratio.	Returns

Topuz et al. (2005)	US REIT	Interest expense, property operating expenses	Total Assets (Loan, Properties, Other assets)
Anderson & Springer (2003)	US REIT	Interest expense, management expense, operating expense, and G&A expense.	Total Assets
Anderson et al. (2002)	NAREIT	Total expenses (interest expense, operating expense, general and admin expense and management fees)	Total assets

5. CONCLUSION

In conclusion, this paper highlighted the importance of examining the performance measurement of REITs and the traditional composite measurement tools and index used to measure the performance of Malaysian REITs particularly the I-REITs. In the case of REITs, the performance of REITs in term of efficiency scores is measured using either parametric or non-parametric approaches. In non-parametric approaches known as linear programming techniques, the DEA is widely used to measure the efficiency of the firms particularly in REITs sector.

This paper has identified a number of issues that need to be addressed to ensure that any efficiency measures for I-REITs are appropriate and reliable. The specific characteristics of Malaysian Islamic REITs need to be considered in the application of the efficiency measurement which would be beneficial in later stage of empirical research within the area. Further research will be undertaken to test a range of efficiency measure currently undertaken for traditional real estate investment funds for their suitability for I-REITs performance measurement. This will assist in the identification of specific issues associated with I-REITs that will need to be addressed in the development and application of efficiency measure for this unique but growing investment market. The findings are also relevant to other countries which offer the similar types of socially responsible investment or *Shariah* compliant real estate investment.

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